

2 Functional and Sensory Responses of Immediately Loaded Implants

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Objective

The aim of this study which commenced in June 2001, is to determine the clinical response of a therapy consisting of im-

mediately loaded single-tooth implants in the posterior region of both maxilla and mandible.

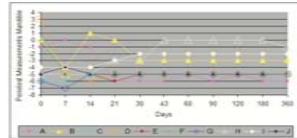


Fig. 1a: Periostest measurements of the Ankylos® implants in the mandible

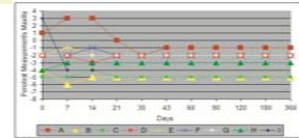


Fig. 1b: Periostest measurements of the Ankylos® implants in the maxilla

Methods

Ankylos implants (Friadent GmbH, Mannheim/Germany) were placed in healed sites after single tooth loss. Screw retained provisional crowns were placed immediately following surgery, with an occlusion in maximum intercuspation. After six weeks implants were restored with a permanent restoration. Periostest (Siemens, München

/Germany), cortical bone level and peri-implant bone density measurements from standardized radiographs were evaluated with image analysis software at baseline, 3, 6 and 12 months postoperatively. Sensory perception thresholds of the implants were evaluated with metal foils in different thicknesses from 10 to 150 microns.



Fig. 2a: Clinical and radiological situation of an Ankylos® A11 implant in the maxilla after 6 weeks with a metal post and provisional crown (left), 6 months with a full-ceramic post and crown (middle) and 12 months (right).

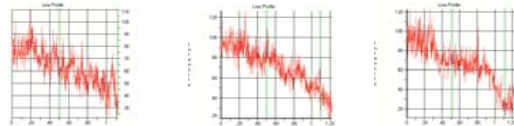


Fig. 2b: Changes in bone density measured on radiographs of the Ankylos® A11 implant replacing a first premolar in the maxilla after placement (left), 6 months (middle) and 12 months (right).



Fig. 3: Changes in bone height occurred radiographically after 3, 6 and 12 months in the mandible (left) and maxilla (right)

Results

26 patients were recruited and treated in this study. 13 implants replaced a first molar and 13 implants replaced premolars. 12 implants have been inserted in the maxilla and 14 in the mandible. The implant length ranged from 8 mm to 14 mm, with diameters of C = 5.5mm (n = 6), B = 4,5 mm (n = 10) and A = 3.5 mm (n = 10). The mean change in cortical bone level after six months is 0.05 mm and after 12 months +0.03 mm (Fig. 3). Increasing density of peri-implant bone has been detected after six and twelve months (Fig. 2b). The Periostest measurements have presented differences of up to 5 over observation time starting with primary stability from average baseline of -5 (Fig. 1). After 30

days no further changes in Periostest measurements have been detected in all cases. Sensory perception thresholds of perceived thickness presented values of 50 to 80 microns after placement. The tactile threshold after 3 months was 10 to 20 microns. One implant failure three weeks after surgery was caused by provisional luting cement impaction. The provisional restoration provides an important role in the molding, contouring and healing of the soft tissue. In 22 cases a gain in interdental papilla height was observed after 1 year. Immediate loading eventually evoke a significant response of implants.